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Rob Hartman
RCRA/CERCLA Manager
FMC Corporation - Pocatello Plant
PO Box 4111
Pocatello, ID 83202

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Reply To
Attn Of: WCM-121

November 8, 2001

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Rob Hartman
RCRA/CERCLA Manager
FMC Corporation Pocatello Plant
P.O. Box 4111
Pocatello, Idaho 83202

RE: Notice of Deficiency (NOD) Pond 18 Closure Plan Volume 1-3, Astaris Pocatello Facility, EPA ID # 07092 9518

Dear Mr. Hartman:

In August 2001, FMC/Astaris submitted the Closure Plan for Pond 18. The U.S. Environmental Protection Agency Region 10(EPA)is providing the public an opportunity to comment on the plan from October 4, 2001 through November 16, 2001.

The modifications described in the enclosed comments must be made before EPA can approve the plan. FMC/Astaris must modify the plan to address the items pertaining to phase 1 of the closure, (i.e. comments 1 through 29 of Volume 1 and 2 - Cell A) within 30 days of receipt of this letter and provide a response to the remainder of the enclosed comments within 45 days of receipt of this letter. The modified plan must include changes to the closure procedures resulting from FMC's decision to close the plant including plans to manage water the company had planned to reuse within the plant.

These enclosed modifications are necessary to ensure adequate controls are in place to minimize releases of hazardous waste and hazardous constituents to protect human health and the environment.
As noted in the comments, provisions for continued phosphine and hydrogen cyanide monitoring and responses in the event elevated gas concentrations are detected must be part of the modified closure plan.

If you have any questions, please contact Linda Meyer at (206) 553-6636 or email Meyer.Linda@epa.gov.

Sincerely,

for Richard Albright, Director
Office of Waste and Chemicals Management

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Enclosure
cc: Susan Hanson, Shoshone-Bannock Tribes w/enclosure
Jeanette Wolfely, Shoshone-Bannock Tribes
Blaine Edmo, Chairman, Fort Hall Business Council
Paul Yochum, FMC/Astaris

GENERAL COMMENTS
ASTARIS/FMC Closure Plan for Pond 18 dated August 2001
Volume 1 and 2, Cell A

1. 40 C.F.R. § 265.228 (b)(2) requires the owner/operator of a surface impoundment which is to be closed as a landfill to, among other things, maintain and monitor the leak detection system in accordance with 40 C.F.R. § 265.226(b). 40 C.F.R. § 265.226(b)(2) requires the company to record the amount of liquids removed from the leak detection sump at least weekly during phase 1 of the closure, and with reduced frequency after the final cover is installed depending on the amounts of liquids found in the sump. The Closure and Post-Closure Plan must be revised to comply with 40 C.F.R. 265.228(b)(2) and include: 1) piping and system modifications for continued operation of the leak collection, detection, and removal system (LCDRS); 2) operating plans to monitor and remove liquids from the sumps and; 3) record keeping for the amount of liquid collected in the sumps.

2. The Pond 18 Closure Plan contains repeated statements concerning the similarity of waste in Pond 18 to waste in Ponds 8S and 15S where there have been no reported problems with phosphine gas during closure. These assertions may be correct, however, absence of adequate characterization data for the wastes in ponds 8S, 15S, and 17 raises concern that the Pond 18 wastes may be similar to those in Pond 16S, where gas emission occurred in early 2001. The Closure Plan must be revised to include:

   a) Results of analyses that have been conducted on the wastes in Pond 18, and a list of all hazardous constituents likely to be found.

   b) Results of any separate analyses for pond solids and liquids (decant water) for Pond 18 wastes, including total phosphorus results and toxicity characteristic leaching procedure extract analyses results from solids samples.

   c) An assessment of the representativeness of the above data.

   d) An evaluation of the waste chemistry and an assessment of the potential for closure of Pond 18 to result in generation, accumulation and ignition of phosphine gas. This evaluation must include a quantitative assessment of the long-term potential for generation of phosphine gas.

   e) An assessment of the presence and the potential for future generation of hydrogen cyanide gas and other toxic gas releases from Pond 18.

The Closure Plan must be revised to account for the above waste analyses and predicted waste behavior and describe in detail how the proposed closure will control, minimize or eliminate the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off,

or hazardous waste decomposition products to groundwater, surface water and the atmosphere.

SPECIFIC COMMENTS

1. **Section 2.3.1, page 2-4, third paragraph**
This paragraph should clarify that these samples were taken after the wastes were treated with lime in a slurry of 20 % solids. Since the waste was treated at the point samples were obtained, these samples were not representative of the waste at the point of generation.

2. **Section 2.3.2, page 2-5 Unit Description**
The operational history for Pond 17 should include a description of the status of the Pond 17 bottom liner system, i.e., if the primary liner is leaking or has leaked. The Closure Plan should include the dates any leaks were detected, leakage rates, and the total volumes pumped from the LCDRS sump.

3. **Section 4.2, page 4-4**
This section should clarify that post-closure monitoring begins at the time the final cap is installed.

4. **Section 4.2, page 4-4**
Elemental phosphorus must be added to the list of constituents for groundwater monitoring.

5. Section 6.1, first bullet
This section must clearly state that bird netting will be maintained over Cell B for the period Cell B is used to manage waste/waste water.

6. **Section 6, Page 6-2, eighth bullet**.
This bullet should include installation of temperature and pressure monitoring equipment.

7. Section 6.6, Schedule
FMC/Astaris must provide the basis for the time estimated to conduct the closure. A detailed schedule for the removal of residual water, sediments, and liner from Cell B must be provided.

8. **Section 6.6, Page 6-7, last paragraph**
This paragraph must include the number of days Astaris will notify EPA in advance of initiating closure work.

9. **Section 6.6.1, Page 6-7**
This paragraph states Astaris will continue to monitor the leak detection system for the surface impoundment. The closure plan must be revised to record the results of this monitoring activity in the operating record and reported annually.

10. **Section 6.6, Page 6-8, Table 6-1**
The schedule must be revised to include the activity of removing the bird netting and support structure.

11. **Section 6.7, page 6-9**
The closure plan should be revised to state that EPA will be notified within 5 working days of any unexpected events that affect the closure plan and would result in an amendment to the plan.

12. **Section 7.1.4, Page 7-12**
This section of the Closure Plan suggests that phosphine gas problems in Pond 16S are "potentially attributable to the phosphine released during sludge intrusive activities of the center dike construction..." The problems in Pond 16S, however, could also be reasonably attributed to desaturation of the pond solids at the edge of the pond as a result of differential settlement and consequent exposure of the pond solids to air. The potential for this event occurring at Pond 18 must be addressed in the Closure Plan.

13. **Section 7.1.4, Page 7-12**
This section notes that contingent temporary gas collection piping will be installed under the temporary cover on Pond 17, in case gas buildup occurs as it did at Pond 16S. The Closure Plan must describe how this contingent system will be installed to prevent the pond solids from being exposed to air if the gas extraction system is operated.

14. **Section 7.1.4, Page 7-12**
The Closure Plan provides no information on the current status of the primary liner. If the primary liner in Pond 17 is currently not leaking, it is still reasonable to expect that minor breaks in the liner already exist or will develop during the post-closure period. If gases are generated in or volatilize from the wastes, they may migrate into the leak detection system (between the primary and secondary liners) and into the LCDRS sumps. Due to the potential for migration of gas outside the limits of the temporary and final cover, the Closure Plan must be revised to include gas monitoring outside the cap limits. Monitoring must include ambient monitoring at a downwind location and gas sampling in the LCDRS sump manhole during each inspection and response procedures in the event elevated levels of phosphine of hydrogen cyanide gas are detected.

15. **Section 7.2.1, Page 7-28, fourth paragraph**
The sludge depth which would trigger placement of wick drains must be stated. Closure Plan must include the expected spacing and number of wick drains. Additional details must be provided on how the bottom liner will be protected from punctures during installation of wick drains.

16. **Section 7.2.1, page 7-28, fifth paragraph**

In addition to managing the water collected in the existing leak collection and detection system in accordance with RCRA the continued operation needs to be in accordance with RCRA during the post-closure period.

17. **Section 7.4, page 7-36**
Additional explanation regarding the meaning of "construction restriction resulting from the lack of protective soil cover over the sacrificial liner", and how this relates to the decision not to install wick drains in this unit must be provided.

18. **Section 7.4.8, Page 7-42**
The Closure Plan must address the fate of the capped waste in the event the solids completely dewater after the final cap is in place.

19. **Section 7.4.4, Page 7-39**
The potential for differential settlement during the initial and final filling are not addressed in the Closure Plan. The Closure Plan must include a proposal for monitoring and addressing differential settlement during initial and final fill.

20. **Section 8.1, Page 8-1**
Additional details must be provided on the removal of bird netting including but not limited to: the plan for removal, location of disposal, and schedule for deconstruction of the net.

21. **Section 8.1, page 8-1 and Section 8.6.2.2, page 8-8**
The second bullet should include capping/plugging of the overflow pipe to Cell B.

22. **Section 8.6.2, page 8-6**
This section identified types of backfilling and includes raising the perimeter dikes which is not discussed in any other section of the Closure Plan. The Closure Plan should make clear whether this step is necessary to initiate Phase 1 closure.

23. **Section 8.6.2.2, Page 8-9**
Additional detail must be provided on the proposal to dispose of the bird netting inside Pond 18. A detailed plan for safely handling the net removal to minimize the potential for disposal of the net in Pond 18 must be provided. In addition, a contingent plan for safe decontamination and disposal in case the netting becomes contaminated with elemental phosphorus waste must be developed. Disposal of any of the bird netting system in the pond is acceptable only if there is a demonstration to EPA's satisfaction that there is no other workable alternative.

24. **Section 8.6.2.2, Page 8-9**
The specific locations the pond emission monitoring system (FTIR) will be relocated to and

reinstalled must be provided in the plan. Plans for continued monitoring at the FTIR locations, at the fenceline, and off site and responses if thresholds are exceeded must be included.

25. **Section 8.6.2.2, Page 8-10**
Additional detail regarding the installation and potential operation of the perforated PVC piping installed in the sand bedding layer to collect gas that may be generated during the initial closure phase must be provided. Specific procedures including but not limited to the depth, spacing, access ports, protective covering, etc. must be included. A description of the operation should that be necessary including location/installation of gas extraction equipment, and operation of the carbon treatment unit must be included.

26. **Section 10** The Closure Plan states that the existing LCDRS system will be operated during the settlement period and later during the post closure period in accordance with 40 CFR 265.228(b)(2). This regulation requires maintenance and monitoring of the leak detection system, and recording of the amount of liquids removed from the leak detection sump at least once each week during the active life and closure period, (this may be reduced to monthly and in some cases quarterly or semi-annually after the final cover is installed). 40 C.F.R. §§ 265.226(b)(1) and 265.221(a) specifically require leak detection system inspection and recording of liquids removed, and collection and removal of pumpable liquids in the sump. The Closure Plan must be revised to provide for inspection of the leak detection sump at least weekly, and recording of the amounts of liquids removed, during the closure period and after the closure period, in accordance with the applicable regulations.

The Closure Plan does not include modifications to the piping from the leak detection ("LCDRS") sump to include standpipes, valve boxes or other arrangements where liquids removed from the sumps can be transferred to containers (e.g., tank trucks) or routed by pipeline to another treatment, storage or disposal unit. The Closure Plan must be revised to include modifications to the leak detection sump discharge piping and pump control system to allow collection and removal of pumpable liquids from the sump during and after closure.

The Plan must be modified to provide for weekly inspections of the leak detection sumps for liquids as required by 40 CFR 265.226(b). In addition, the leak detection system inspection description (page 10-8) does not include the requirement to remove pumpable liquids from the sumps and record the amounts of liquids removed. The Inspection Record Form must be revised to include recording the amount of liquid removed. In addition, the Closure Plan does not mention inspection or removal of liquids from the leak detection sump during closure. Revise the Post-Closure Plan Inspection Record Form and Activity Checklists to provide for initial monthly inspections of the leak detection sump for liquids, with potential reduced frequencies as provided in 265.226(b)(2). (A separate record form for leak detection system inspections is recommended, with spaces for recording the amounts removed.) Revise the leak detection inspection description to include removal of pumpable liquids and recording of the amounts of liquids removed from each sump.

The Closure and Post-Closure Plans do not mention the pump operating level in the leak detection (LCDRS) sump. This elevation or depth is the level at which the pump operating switch must be set to prevent backup of liquids in the impoundment drainage layer and to minimize head in the sump. The pump operating level is the benchmark against which liquid levels must be measured to comply with 40 CFR 265.226(b)(2). Revise the Closure and Post-Closure Plans to define the pump operating level in the leak detection sump, and provide for measuring of liquid in the leak detection sump in relation to the pump operating level during every inspection of the sump.

27. **Section 10 Action Leakage Rate**

The Closure and Post-Closure Plans do not include determination of the average daily flow rate, and comparison with the action leakage rate, as required by 40 C.F.R. §265.222(c). The average daily flow rate must be calculated weekly during the active life and closure period, and monthly or less frequently, in accordance with 40 CFR 265.226(b), during the post-closure period.

Revise the Closure and Post-Closure Plans to provide for calculation of the average daily flow rate, and comparison with the action leakage rate and to include a revised response action plan that complies with 40 C.F.R.§ 265.223.

28. **Section 10.8, page 10-10**

The Post-Closure Plan proposes an action level of 27 inches of mercury as the alarm level and (if confirmed) the criterion for conducting gas sampling. The plan must be revised to justify this action level and to explain how this action level was selected. Records of the typical seasonal ranges and average of ambient barometric pressure in the vicinity of the facility must be provided to support this action level.

29. **Appendix I Report on consolidation and settlement analysis**

Section 2 of this report states that wick drains undoubtedly increase the rate of settlement, but that the magnitude of settlement depends on the thickness of the sediments. Since Astaris/FMC has proposed to continue using Pond 18 Cell B for collection of water resulting from Pond 18 Cell A detwatering until the settling criteria are met, increasing the rate of settlement is desired as this reduces emissions to the atmosphere. The analysis fails to demonstrate the relationship between the rate of settlement and placement or spacing of the wick drains. This information does not support the conclusion presented earlier, to not install wick drains. Further justification must be provided to EPA's satisfaction or a proposal to install wick drains must be included.

Attachment 10-1a: Quality Assurance Project Plan

GENERAL COMMENTS

1. The hierarchy and interrelationships among the Quality Assurance Project Plan (QAPP) and associated Field Sampling Plans (FSPs) must be clarified.

1.1 The QAPP states that its requirements are implemented through a series of ten FSPs. It specifies that Attachment 10-1b is the FSP for Pond 18, Cell A, but does not discuss the remaining nine FSPs. The QAPP must list and describe all associated FSPs.

1.2 The Pond 18 Closure Plan table of contents lists the QAPP under "Attachment 10-1: Sampling and Analysis Plan for Pond 18, Cell A, Post-Closure Groundwater Monitoring." However, the subject QAPP addresses nine Waste Management Units (WMUs) at the facility, one of which is Pond 18. The QAPP must state clearly its scope, and adhere to it throughout.

2. The subject QAPP is a generic document that addresses groundwater monitoring activities at nine WMUs. The QAPP must indicate clearly which requirements apply to groundwater monitoring activities at Pond 18, Cell A, and which do not. It must also provide the requisite level of detail to accomplish the objectives of this project (see applicable Specific Comments below).

3. The QAPP must list the individuals/organizations to whom the approved QAPP, FSPs, and subsequent revisions will be issued. This list should include all persons responsible for implementation, the QA managers, and representatives of each group or organization involved.

SPECIFIC COMMENTS

4. Page 1, Section 1, Project Management: The QAPP must invoke and comply with the most recent verison of *EPA Requirements for Quality Assurance Project Plans*, EPA QA/R-5, March 2001. This document and its companion guidance document (EPA QA G-5) are available through EPA's website at http://es.epa.gov/ncerqa/qa_docs.html.

5. Pages 1-3, Section 1.1, Project Organization:

5.1 The QAPP must identify all project participants, including the individual responsible for overall project execution. The senior-most individual identified in the QAPP is the "Astaris Environmental Supervisor or Engineer." The QAPP must identify one specific individual to be responsible for this critical role.

5.2 The QAPP must identify a project quality assurance manager and demonstrate that she or he is independent of the data generating unit. This does not require independence from senior corporate managers who are nominally, but not functionally, involved in data generation, use, or decision-making.

5.3 The QAPP must identify the individual responsible for maintaining the official, approved QAPP and accompanying FSPs.

5.4. The QAPP must identify all participating organizations, including contractor organizations with responsibilities related to environmental data operations (i.e., sampling, analysis, and data validation).

5.5 The QAPP must specify the nature and extent of the authority (e.g., stop and start work, hiring and firing of personnel) of each function.

5.6 The QAPP must describe the protocols in place to verify the qualifications and capacity of support contractors (i.e., laboratory, sampling contractor, and data validation contractor), select support contractors, monitor each contractor's performance, and verify and ensure initial and continued compliance with the QAPP and associated FSP. These protocols must address specific procedures and responsibilities.

6. Page 3, Section 1.2, Background: The QAPP must state the specific problem to be solved, decision to be made, or outcome to be achieved. The QAPP must also provide sufficient background information to provide a historical, scientific, and regulatory perspective for this particular project, i.e, groundwater monitoring relative to the closure of Pond 18, Cell A. Critical background information needs include: the nature and history of the wastes managed in Pond 18, Cell A, engineering controls and physical characteristics of the WMU, and relevant geological and hydrogeological site conditions.

7. Page 3, Section 1.3, Project Description: The QAPP must provide a summary of all work to be performed and products to be produced under this project at the Pond 18, Cell A WMU. The QAPP must explain how this project will resolve the problem or question described under Section 1.2, once revised.

8. Page 4, Table 1, WMU-Specific RCRA Groundwater Monitoring Wells: The information in this table appears to indicate that the monitoring program for Pond 18, Cell A is for detection and post closure, but not compliance. The QAPP must clarify the specific nature and objectives of groundwater monitoring activities at Pond 18, Cell A and provide a rationale.

9. Page 6, Section 1.4, Quality Objectives and Criteria for Measurement Data: The QAPP must specify objectives and criteria related to the post-closure monitoring program, as specified in Table 1 (page 4).

10. Page 6, Section 1.4.1, Detection Monitoring:

10.1 The QAPP must invoke and comply with EPA's Guidance for the Data Quality Objectives Process (G-4, August 2000) and Guidance for the Data Quality Objectives Process for Hazardous Waste Sites (G-4HW, January 2000). These references are available through EPA's website.

10.2 The QAPP must identify the specific type, quantity, and quality of data that are required to meet the objectives outlined for the Pond 18, Cell A Closure Plan. Specifically, the QAPP must explain how the stated objectives translate into the QAPP-defined sampling and analysis specifications, and how the resulting data will be used to achieve the specified objectives.

10.3 The QAPP must provide a basis or rationale for determining the chemicals of concern for this project (as listed in Table 3A, page 8). This rationale must take into consideration the types and levels of wastes managed in Pond 18, Cell A, and historical data.

10.4 The QAPP must specify which project samples will be analyzed for total metals and which will be analyzed for dissolved metals. The QAPP must specify whether samples for dissolved solids will be filtered in the field or at the laboratory.

10.5 The QAPP must address sample representativeness, comparability, and completeness. The QAPP must describe or reference the specific procedures and equations to be used to calculate the statistics for precision, accuracy, and completeness, i.e., percent completeness, relative percent difference, percent recovery, relative standard deviation, and detection limits. The QAPP must specify the controls in place to ensure comparability with historic data (as discussed in the FSP).

11. Page 6, Section 1.4.2, Compliance Groundwater Monitoring: Based on the information provided in Table 1, it would appear that this section is not relevant to groundwater monitoring activities at Pond 18, Cell A. The QAPP must be clarified on this point.

12. Page 7, Table 2, Groundwater Protection Standards: Based on the information provided in Section 1.4.2, it would appear that the information in this table is relevant only to compliance monitoring and, hence, not relevant to groundwater monitoring activities at Pond 18, Cell A. However, footnote number four makes reference to Pond 18. The QAPP must be clarified on this point.

13. Pages 9-10, Table 3B, Summary of Required Analyses Compliance Monitoring: Based on the information provided in Section 1.4.2, it would appear that the information in this table is relevant only to compliance monitoring and, hence, not relevant to groundwater monitoring activities at Pond 18, Cell A. The QAPP must be clarified on this point.

14. Page 11, Section 1.5, Project Narrative:

14.1 The QAPP states that "groundwater monitoring at the Astaris Facility will be conducted to detect leaks, determine if concentrations exceed groundwater protection standards, and determine if chemicals listed in 40 CFR Part 264, Appendix IX are present

at the facility." The QAPP must clarify which of these objectives apply to groundwater monitoring activities at Pond 18, Cell A.

14.2 The QAPP must clarify what is meant by "groundwater samples will be collected ... in accordance with the requirement specified in the companion Field Sampling Plan(s) and the procedures in the applicable WMU-specific FSP." How many and which FSPs address the sampling requirements for groundwater monitoring activities at Pond 18, Cell A? The Closure Plan includes only one FSP for groundwater monitoring. Would this be the "companion FSP" or the "WMU-specific FSP"? The facility must provide both for review.

15. Page 11, Section 1.6, Special Training Requirements/Certification: The QAPP must address the personnel training requirements specified in EPA QA/R-5, Element A8: Special Training/Certification. Specifically, the QAPP must:

15.1 Identify and describe any special training or certifications needed by personnel and support organizations (e.g., laboratory, sampling contractor, and data validation contractor).

15.2 Discuss how such training will be provided and how the necessary skills will be assured and documented.

16. Page 11, Section 1.7, Documentation and Records: The QAPP must address the document control requirements specified in EPA QA/R-5, Element A9: Documents and Records. Specifically, the QAPP must:

16.1 Describe the process and responsibilities for ensuring that project personnel (including support contractors) have the most current approved version of the QAPP and accompanying FSPs, including version control, updates, distribution, and disposition. These processes must take into account complications that may arise because the subject QAPP has been included in more than one closure plan.

16.2 Itemize the information and records that must be included in the data report package and specify the reporting format for hard copy and any electronic forms. The QAPP states that "Laboratory documentation and records requirements are specified in the laboratory QAPP." The laboratory's QAPP must be provided to EPA for review.

16.3 Identify any other records and documents that will be produced.

16.4 Specify or reference all applicable requirements for the final disposition of records and documents.

17. Page 11, Section 2, Measurement/Data Acquisition: The QAPP must describe the experimental data collection design for the project as specified in EPA QA/R-5, Element B1: Sampling Process Design. Specifically, the QAPP (or companion FSP) must describe the rationale for the sampling network design, well location, and measurement parameters of interest.

18. Page 12, Section 2.2, Sample Handling and Custody Requirements: While field sample handling and custody procedures are included in the FSP, the QAPP must describe the requirements for sample handling and custody during transport, analysis, and storage.

19. Page 12, Section 2.3, Analytical Methods Requirements:

19.1 The QAPP must specify roles and responsibilities relative to the review and approval of the laboratory's "established quality assurance/quality control (QA/QC) plan."

19.2 The QAPP must require the use of the same methods as those used to generate the historical data against which the project data will be evaluated.

19.3 The QAPP states that "analyses will be performed in accordance with standard operating procedures consistent with the QA/QC plan." The QAPP must specify and include these standard operating procedures.

19.4 The QAPP must describe how system failures are to be addressed, specify responsibilities for corrective action, and address how the effectiveness of corrective actions will be determined and documented.

19.5 The QAPP must include or reference the specific procedures that will be used to determine MDLs.

20. Page 12, Section 2.4, Quality Control Requirements: The QAPP must require that sample containers be selected, prepared, cleaned, and controlled per EPA Directive #9240.0-05A Specifications and Guidance for Contaminant-Free Sample Containers (EPA 540/R-93/051, December 1992).

21. Pages 12-13, Section 2.4.1, Field Duplicates:

21.1 The QAPP must address the collection of field blanks, e.g., equipment rinsate blanks and distilled/deionized water blanks.

21.2 The FSP (page 3) states that duplicates "will be collected at a frequency of one per sample delivery group or one per twenty samples collected." The FSP further clarifies

that duplicates will be collected based on the total number of samples collected from all WMUs. The QAPP specifies that duplicates will be collected "at a frequency of one per every ten routine samples" and does not clarify further. The QAPP and FSP must be consistent with each other.

21.3 The QAPP must include protocols for the collection and submittal of split samples to EPA, on an as requested basis.

22. Page 13, Section 2.4.2, Laboratory QA/QC Samples:

22.1 The QAPP must specify the required type and frequency of laboratory QA/QC samples. It must list the associated method or procedure and corrective action in the event of failure to meet established acceptance criteria. Laboratory QC samples include, but are not limited to, method and reagent blanks, duplicates, matrix spikes, and independent calibration verification standards. The QAPP must specify or reference the procedures to be used to calculate applicable statistics (e.g., precision, accuracy, and completeness).

22.2 Laboratory QA/QC samples are not collected by the sampling team, rather they are prepared in the laboratory by the laboratory personnel. Field personnel can be requested to collect sufficient volume of a pre-defined field sample and submit it to the laboratory so that the laboratory can prepare matrix spikes (organics and inorganics) and matrix spike duplicates (organics). The QAPP must be revised and corrected accordingly.

22.3 The QAPP states that "Other specific requirements associated with laboratory QA/QC are specified in the laboratory QAPP." The QAPP must address the facility's protocols for review and approval of these requirements. Also, the laboratory's QAPP must be provided to EPA for review.

23. Page 13, Section 2.5, Instrument/Equipment Testing, Inspection, and Maintenance Requirements: The QAPP must address the requirements specified in EPA QA/R-5, Element B6: Instrument/Equipment Testing, Inspection, and Maintenance. Specifically, the QAPP must:

23.1 Describe how inspections and acceptance testing of instruments, equipment, and their components affecting quality will be performed and documented to assure their intended use as specified in the QAPP/FSP.

23.2 Identify and discuss the procedure by which final acceptance will be performed by independent personnel (i.e., personnel other than those performing the work).

23.3 Describe how deficiencies are to be resolved, when re-inspection will be performed, and how the effectiveness of the corrective action will be determined and documented.

23.4 Describe or reference how periodic preventive and corrective maintenance of measurement or test equipment affecting quality will be performed to ensure availability and satisfactory performance.

23.5 Identify all equipment requiring periodic maintenance, including major laboratory equipment.

24. Page 13, Section 2.6, Instrument Calibration and Frequency: The QAPP must address the requirements specified in EPA QA/R-5, Element B7: Instrument/Equipment Calibration and Frequency. Specifically, the QAPP must:

24.1 Identify all equipment requiring calibration, including major laboratory equipment.

24.2 Describe or reference how calibration will be conducted and identify the certified equipment and/or standards used for calibration.

24.3 Indicate how records of calibration will be maintained and be traceable to the instrument.

25. Page 13, Section 2.7, Inspection/Acceptance Requirements for Supplies and Consumables: The QAPP must describe how and by whom supplies and consumables will be inspected and accepted for use. It must state the acceptance criteria for such supplies and consumables. The QAPP must further clarify what is meant by "All other consumables will be decontaminated prior to use." Consumables include standards, reagents, calibration gases, and other materials that are consumed upon use and not amenable to decontamination.

26. Page 15, Section 2.9, Data Management: The QAPP must address the requirements specified in EPA QA/R-5, Element B10: Data Management. Specifically, the QAPP must:

26.1 Describe the procedures for compiling and manipulating historical and project data or reference the applicable document control system. This includes a system for tracking field notebooks, field forms, and laboratory data packages.

26.2 Discuss the control mechanism for detecting and correcting errors and for preventing loss of data during data reduction, data reporting, and data entry to forms, reports, and databases.

26.3 The QAPP should invoke the use of ASTM E178-94, Standard Practice for dealing with Outlying Observations. The QAPP must further state that all project data will be reported, including outliers, and that data reports will identify the rationale for declaring data points as outliers.

27. Page 16, Section 3, Assessment/Oversight:

27.1 The QAPP must provide or reference the specific procedures for performing and documenting assessment and response activities.

27.2 The QAPP must clarify who will conduct the laboratory audits.

27.3 The QAPP must specify who prepares field surveillance and laboratory audit reports. It must also specify the contents of these reports.

27.4 The QAPP must define the scope of authority of the assessors, including stop work orders, and when assessors are authorized to act.

28. Page 19, Section 3.2, Reports to Management: The QAPP must identify the distribution of listed reports.

29. Page 19, Section 4.1, Data Review, Validation, and Verification Requirements:

29.1 The QAPP must state the criteria used to review and validate data in an objective and consistent manner. It is not sufficient that the data be reviewed for consistency with previous results. They must be reviewed against method-specified criteria and validated against QAPP-specified criteria.

29.2 The QAPP must specify who (and on what basis) will select the 10 percent of the data to be validated.

29.3 The QAPP must address how the results of field duplicates will be used to evaluate project data. How will data be flagged based on field duplicate results?

30. Page 19, Section 4.2, Validation and Verification Methods: The QAPP must describe or reference the specific procedures for verifying and validating project data. It must discuss how issues will be resolved and the authorities for resolving such issues.

31. Page 20, Section 4.3, Reconciliation with User Requirements:

31.1 The QAPP must identify who is responsible for data reconciliation.

31.2 The QAPP must describe how data reconciliation will be documented, issues will be resolved, and how limitations on data use will be reported.

31.3 The QAPP must clarify what is meant by "sufficient data of known quality." Data completeness objectives must be established and documented in the QAPP before data collection activities occur.

32. Page 20, Section 5, References: The QAPP must update the reference for EPA QA/R-5.

Attachment 10-1b: Field Sampling Plan

GENERAL COMMENTS

33. The FSP must reference and invoke the associated QAPP. If the FSP is intended to be a stand alone document for field personnel, then it must duplicate all QAPP-defined specifications for field activities, such as distribution and control of the FSP, calibration and use of field equipment, and roles and responsibilities related to field activities. If the FSP is intended as a fixed companion document to the QAPP, then the FSP must include a statement to that effect such that field personnel are aware of the fact that they need both documents in the field.

34. The FSP must reference and invoke all associated standard operating procedures, e.g., those of the sampling contractor.

SPECIFIC COMMENTS

35. Page 3, Section 3.2, Duplicate Groundwater Monitoring Well Sample:

35.1 The FSP must include protocols for the collection and submittal of split samples to EPA, on an as requested basis.

35.2 The FSP states that duplicates "will be collected at a frequency of one per sample delivery group or one per twenty samples collected." The FSP further clarifies that duplicates will be collected based on the total number of samples collected from all WMUs. The QAPP (page 13) specifies that duplicates will be collected "at a frequency of one per every ten routine samples" and does not clarify further. The QAPP and FSP must be consistent with each other.

36. Page 3, Section 3.3, Laboratory Quality Control Samples: Laboratory QC samples are not collected by the sampling team, rather they are prepared in the laboratory by the laboratory personnel. Field personnel can be requested to collect sufficient volume of a pre-defined field sample and submit it to the laboratory so that the laboratory can prepare matrix spikes (organics and inorganics) and matrix spike duplicates (organics). The FSP must be revised and corrected accordingly.

37. Page 5, Section 5, Sampling Equipment and Procedures:

37.1 The FSP must list and describe all field equipment to be used in the sampling event, including sampling and measurement and test equipment. The FSP must specify which equipment will be disposable and which will require decontamination.

37.2 The FSP must define requirements related to quality control of reagents used in the field, e.g., sample preservation acid solutions and calibration standards.

37.3 The FSP must require the use of the same methods as those used to generate the historical data against which the project data will be evaluated.

37.3 The FSP must require the use of and specify the information that will be documented on chain-of-custody forms.

38. Page 7, Section 5.1.1: Sample Coding in Field Logbooks:

38.1 The FSP addresses sample coding for Matrix Spike Duplicate samples. The FSP must clarify the need for MS/MSD samples for Pond 18, Cell A. If MS/MSDs are required, then they must be addressed in the QAPP as well.

38.2 The FSP must require the use of rain-resistant field notebooks and waterproof ink.

38.3 The FSP must require the following: The person recording the notes will sign and date the bottom of every page in the field notebook. Changes will be crossed out with a single line so that the original text remains legible; the change will be initialed and dated. Unused portions of logbook pages will be crossed out, signed, and dated by the assigned individual at the end of each workday.

38.4 The FSP must require the sampling team to include the following information in the field notebook at the time of sample collection: date, well number and apparent condition, weather conditions, numerical value and units of each measurement, sample numbers, depth sampled, description of samples (e.g., color, odor, clarity), and conditions that might affect the representativeness of the samples.

39. Pages 7-8, Section 5.1.2, Sample Coding on Sample Containers: The FSP must clarify the protocols the sample team leader will use to "create a unique number for each sample container." Also, EPA procedures related to field notebook records and custody forms have been established to provide redundancy of sampling information. Under the proposed system, the information in the field notebooks is not duplicated elsewhere. The FSP must provide for a backup system for reconciling these numbers with the "true sample codes" in the event that the field notebook is lost or damaged.

40. Pages 8-10, Section 5.2.2, Well Purging: Current EPA protocols dictate the use of low flow/low stress purging and sampling. The FSP must either replace this discussion with a discussion for low flow/low stress purging techniques or provide a rationale for using traditional purging techniques.

41. Page 10, Section 5.2.3, Well Sampling:

41.1 The FSP states that "Normally, groundwater samples with turbidity levels >10 NTU will be analyzed for both total and dissolved metals." The FSP must either clarify which project samples for metals analysis will be filtered (dissolved metals) and which will not (total metals), or provide a definitive decision point and protocols for this determination.

41.2 The procedure offers the choice of glass or polyethylene sample containers. Table 3 (page 13) and the QAPP require the use of polyethylene sample containers. The FSP must be corrected to be consistent within itself and with the QAPP.

41.3 The procedure addresses steps for collecting and preserving filtered samples for dissolved metals, but does not address the collection and preservation of unfiltered samples for total metals. If samples may be collected for total metals, specific procedures must be provided on how these samples are to be collected and preserved.

41.4 The FSP must provide detailed procedures for the collection and preservation of samples for ammonia, water quality, and orthophosphate.

42. Page 11, Section 5.3, Duplicate Groundwater Monitoring Well Sample Collection: The FSP must clarify what is meant by "bottles with two different sample designations will be alternated in the filling sequence."

43. Page 11, Section 5.5, Conductivity, Temperature, Turbidity, and pH Measurements: The FSP must describe or reference specific procedures for the calibration and use of each piece of field measurement and test equipment. These procedures must specify applicable documentation requirements for field measurements.

44. Pages 11-12, Section 5.6, Equipment Decontamination Procedure: The FSP offers choices as to how the same piece of equipment will be decontaminated. For example, water probes will be "rinsed with de-ionized water or cleaned in a detergent solution and rinsed once in fresh water after each use." The FSP must either designate specific decontamination procedures or provide decision criteria and protocols for selecting decontamination procedures.

45. Page 13, Section 6.1, Sample Handling:

45.1 The FSP must specify the procedures in place to ensure the continued integrity of the samples by guarding against cross contamination or degradation.

45.2 The FSP must specify the procedures in place to ensure a continuous chain of custody from sample collection to sample receipt by the laboratory.

45.3 Pre-cleaned and certified sample containers should not be rinsed prior to use. The FSP must be corrected regarding this matter.

Attachment 10-2a: Quality Assurance Project Plan

GENERAL COMMENTS

46. The QAPP must list the individuals/organizations to whom the approved QAPP, FSPs, and subsequent revisions will be issued. This list should include all persons responsible for implementation, the QA managers, and representatives of each group or organization involved.

SPECIFIC COMMENTS

47. Page 1, Section 1, Project Management: The QAPP must invoke and comply with the most recent verison of *EPA Requirements for Quality Assurance Project Plans*, EPA QA/R-5, March 2001. This document and its companion guidance document (EPA QA G-5) are available through EPA's website.

48. Pages 1-3, Section 1.1, Project Organization:

48.1 The QAPP must identify all project participants, including the individual responsible for overall project execution. The senior-most individual identified in the QAPP is the "Astaris Environmental Supervisor or Engineer." The QAPP must identify one specific individual to be responsible for this critical role.

48.2 The QAPP must identify a project quality assurance manager and demonstrate that she or he is independent of the data generating unit. This does not require independence from senior corporate managers who are nominally, but not functionally, involved in data generation, use, or decision-making.

48.3 The QAPP must identify the individual responsible for maintaining the official, approved QAPP and accompanying FSPs.

48.4 The QAPP must identify all participating organizations, including contractor organizations.

48.5 The QAPP must specify the nature and extent of the authority (e.g., stop and start work, hiring and firing of personnel) of each function.

48.6 The QAPP must describe the protocols in place to verify the qualifications and capacity of support contractors, select support contractors, monitor each contractor's performance, and verify and ensure initial and continued compliance with the QAPP and

associated FSP. These protocols must address specific procedures and responsibilities.

49. Page 3, Section 1.2, Background: The QAPP must state the specific problem to be solved, decision to be made, or outcome to be achieved. The QAPP must also provide sufficient background information to provide a historical, scientific, and regulatory perspective for this particular project, i.e., groundwater monitoring relative to the closure of Pond 18, Cell A.

50. Page 3, Section 1.3, Project Description: The QAPP must provide a summary of all work to be performed and products to be produced under this project at the Pond 18, Cell A WMU. The QAPP must explain how this project will resolve the problem or question described under Section 1.2, once revised.

51. Page 8, Section 1.6, Special Training Requirements/Certification: The QAPP must address the personnel training requirements specified in EPA QA/R-5, Element A8: Special Training/Certification. Specifically, the QAPP must:

51.1 Identify and describe any special training or certifications needed by personnel and support organizations.

51.2 Discuss how such training will be provided and how the necessary skills will be assured and documented.

52. Page 8, Section 1.7, Documentation and Records: The QAPP must address the document control requirements specified in EPA QA/R-5, Element A9: Documents and Records. Specifically, the QAPP must:

52.1 Describe the process and responsibilities for ensuring that project personnel (including support contractors) have the most current approved version of the QAPP and accompanying FSPs, including version control, updates, distribution, and disposition.

52.2 Itemize the information and records that must be included in the data report package and specify the reporting format for hard copy and any electronic forms.

52.3 Identify any other records and documents that will be produced.

52.4 Specify or reference all applicable requirements for the final disposition of records and documents.

53. Pages 8-9, Section 2.3, Analytical Methods Requirements:

53.1 The QAPP must describe how system failures are to be addressed, specify responsibilities for corrective action, and address how the effectiveness of corrective

actions will be determined and documented.

53.2 The QAPP must provide or reference specific procedures for operating each piece of equipment and for each measurement activity. These procedures must specify applicable documentation requirements.

54. Page 9, Section 2.3.3, Gas Sampling: The QAPP must specify the conditions under which gas sampling will be required.

55. Page 9, Section 2.4, Quality Control Requirements: The QAPP must address measurement representativeness, comparability, and completeness. It must provide or reference procedures for the generation of QC data associated with project measurements. QC data may include field operating conditions and replicate measurements.

56. Page 10, Section 2.5, Instrument/Equipment Testing, Inspection, and Maintenance Requirements:

56.1 Temperature and pressure sensors should be inspected prior to each use.

56.2 The QAPP must indicate how and by whom maintenance records will be maintained and be traceable to the instrument.

57. Page 10, Section 2.6, Instrument Calibration and Frequency: The QAPP must indicate how and by whom calibration records will be maintained and be traceable to the instrument.

58. Page 10, Section 2.9, Data Management: The QAPP must address the requirements specified in EPA QA/R-5, Element B10: Data Management. Specifically, the QAPP must:

58.1 Describe the procedures for compiling and manipulating project data or reference the applicable document control system. This includes a system for tracking field notebooks and data logger data files.

58.2 Discuss the control mechanism for detecting and correcting errors and for preventing loss of data during data reduction, data reporting, and data entry to forms, reports, and databases.

59. Pages11-12, Section 3, Assessment/Oversight:

59.1 The QAPP must provide or reference the specific procedures for performing and documenting assessment and response activities.

59.2 The QAPP must specify who prepares field surveillance and laboratory audit reports. It must also specify the contents of these reports.

59.3 The QAPP must define the scope of authority of the assessors, including stop work orders, and when assessors are authorized to act.

60. Page 12, Section 4.1, Data Review, Validation, and Verification Requirements: The QAPP must state the criteria used to review and validate data in an objective and consistent manner. It is not sufficient that the data be reviewed for consistency with previous results. They must be reviewed against method-specified criteria and validated against QAPP-specified criteria.

61. Page 19, Section 4.2, Validation and Verification Methods: The QAPP must describe or reference the specific procedures for verifying and validating project data. It must discuss how issues will be resolved and the authorities for resolving such issues.

62. Pages 12-13, Section 4.3, Reconciliation with User Requirements:

62.1 The QAPP must identify who is responsible for data reconciliation.

62.2 The QAPP must describe how data reconciliation will be documented, and how issues will be resolved and reported.

62.3 The QAPP must clarify what is meant by "sufficient data of known quality." Data completeness objectives must be established and documented in the QAPP before data collection activities occur.

62.4 The QAPP must specify the actions to be taken in the event that the temperature, pressure, or gas measurements indicate an increase from previous measurements.

62.5 The QAPP must clarify that if gas concentrations indicate that further information on gas characteristics must be generated, that this QAPP must be revised as necessary to meet the additional data needs.

63. Page 13, Section 5, References: The QAPP must update the reference for EPA QA/R-5.

Attachment 10-2b: Field Sampling Plan

SPECIFIC COMMENTS

64. Page 1, Section 1, Introduction: If the FSP is not a stand alone document the FSP must state that noting it is a fixed companion document to the QAPP, in addition field personnel must have access to both documents in the field.

65. Page 5, Section 4.1: Field Logbooks:

65.1 The FSP must require the use of rain-resistant field notebooks and waterproof ink.

65.2 The FSP must require the following: The person recording the notes will sign and date the bottom of every page in the field notebook. Changes will be crossed out with a single line so that the original text remains legible; the change will be initialed and dated. Unused portions of logbook pages will be crossed out, signed, and dated by the assigned individual at the end of each workday.

65.3 The FSP must require the field team to include the following information in the field notebook at the time of data measurement: well identification and apparent condition, and numerical value and units of each measurement.

APPENDIX D - FIELD SAMPLING PLAN FOR EQUIPMENT DECONTAMINATION CONFIRMATION, DURING RCRA POND CLOSURES

GENERAL COMMENTS

66. The subject Field Sampling Plan (FSP) must either reference and invoke a companion Quality Assurance Project Plan (QAPP) or include all of the elements required by the most recent verison of *EPA Requirements for Quality Assurance Project Plans*, EPA QA/R-5, March 2001. This document and its companion guidance document (EPA QA G-5) are available through EPA's website. Specifically, the FSP must address EPA QA/R-5 requirements related to:

66.1 Distribution

66.2 Project/Task Organization

66.3 Quality Objectives and Criteria

66.4 Special Training/Certification

66.5 Documents and Records

66.6 Sampling Process Design

66.7 Instrument/Equipment Testing, Inspection, and Maintenance

66.8 Instrument/Equipment Calibration and Frequency

66.9 Inspection/Acceptance of Supplies and Consumables

66.10 Data Management

66.11 Assessment and Response Actions

66.12 Reports to Management

67. The FSP must provide the rationale for addressing activities related to rinsate and distilled water blanks in a separate and distinct document. Rinsate and distilled water blanks are generally addressed in the same QAPP/FSP as the associated field samples. The FSP must also address how the data collected under this FSP are correlated with the associated field samples.

SPECIFIC COMMENTS
ASTARIS/FMC Closure Plan for Pond 18 dated August 2001
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1. Section 4.7, page 4-7
EPA should be notified within 5 working days of any unexpected events that affect the closure plan and would result in an amendment to the plan.

2. Section 5.2, page 5-2
Specific activities which may interfere with the FTIR or create creating the need for removal of the system must be listed and response actions described.

3. Section 5.2, page 5-2
Clarification must be provided regarding management of the pond decant water. Since use of the decant within the plant is not an option now that the plant will not be operating, alternative disposal options must be presented.

4. **Section 5.2, page 5-2**
A contingency proposal for managing pond solids which can not be pumped must be included.

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Appendix B - Field Sampling Plan for Equipment Decontamination Confirmation During RCRA Pond Closure

GENERAL COMMENTS

1 The subject Field Sampling Plan (FSP) must either reference and invoke a companion Quality Assurance Project Plan (QAPP) or include all of the elements required by the most

recent verison of *EPA Requirements for Quality Assurance Project Plans*, EPA QA/R-5, March 2001. This document and its companion guidance document (EPA QA G-5) are available through EPA's website at http://es/epa/ncerqa/qa/qa_docs.html. Specifically, the FSP must address EPA QA/R-5 requirements related to:

1.1 Distribution

1.2 Project/Task Organization

1.3 Quality Objectives and Criteria

1.4 Special Training/Certification

1.5 Documents and Records

1.6 Sampling Process Design

1.7 Instrument/Equipment Testing, Inspection, and Maintenance

1.8 Instrument/Equipment Calibration and Frequency

1.9 Inspection/Acceptance of Supplies and Consumables

1.10 Data Management

1.11 Assessment and Response Actions

1.12 Reports to Management

2 The FSP must provide the rationale for addressing activities related to rinsate and distilled water blanks in a separate and distinct document. Rinsate and distilled water blanks are generally addressed in the same QAPP/FSP as the associated field samples. The FSP must also address how the data collected under this FSP are correlated with the associated field samples.

Quality Assurance Project Plan

GENERAL COMMENTS

1 The QAPP must list the individuals/organizations to whom the approved QAPP, FSPs, and subsequent revisions will be issued. This list should include all persons responsible for implementation, the QA managers, and representatives of each group or organization involved.

SPECIFIC COMMENTS

2 Page 1, Section 1, Project Management: The QAPP must invoke and comply with the most recent version of *EPA Requirements for Quality Assurance Project Plans*, EPA QA/R-5, March 2001. This document and its companion guidance document (EPA QA G-5) are available through EPA's website at http://es/epa/ncerqa/qa/qa_docs.html.

3 Pages 1-3, Section 1.1, Project Organization:

3.1 The QAPP must identify all project participants, including the individual responsible for overall project execution. The senior-most individual identified in the QAPP is the "Astaris Environmental Supervisor or Engineer." The QAPP must identify one specific individual to be responsible for this critical role.

3.2 The QAPP must identify the individual responsible for maintaining the official, approved QAPP and accompanying FSPs.

3.3 The QAPP must identify all participating organizations, including contractor organizations with responsibilities related to environmental data operations (i.e., sampling, analysis, and data validation).

3.4 The QAPP must specify the nature and extent of the authority (e.g., stop and start work, hiring and firing of personnel) of each function.

3.5 The QAPP must describe the protocols in place to verify the qualifications and capacity of support contractors (i.e., laboratory, sampling contractor, and data validation contractor), select support contractors, monitor each contractor's performance, and verify and ensure initial and continued compliance with the QAPP

and associated FSP. These protocols must address specific procedures and responsibilities.

4 Page 3, Section 1.2, Background: The QAPP must provide sufficient background information to provide a historical, scientific, and regulatory perspective for this particular project, i.e, groundwater monitoring relative to the closure of Pond 18, Cell B. Critical background information needs include: the nature and history of the wastes managed in Pond 18, Cell B, governing action levels, engineering controls and physical characteristics of the WMU, and relevant geological and hydrogeological site conditions.

5 Page 3, Section 1.3, Project Description: The QAPP must provide a summary of all work to be performed and products to be produced under this project at the Pond 18, Cell B WMU. The QAPP must explain how this project will resolve the problem or question described under Section 1.2.

6 Page 4, Section 1.4, Quality Objectives and Criteria for Measurement Data:

6.1 The QAPP must provide the rationale for establishing the project quality objective of hot spot search as to "detect 100 feet diameter circular area(s)of impacted silt/bentonite at an 80 percent level of confidence (i.e., allows a 20 percent chance of not finding a hot spot)."

6.2 The basis for the risk numbers must be provided, for example the land use scenario and pathway of exposure. Since these numbers were derived a number of years ago the toxicity information must be re-evaluated to ensure these numbers are up-to-date.

6.3 The QAPP must address sample representativeness and comparability. The QAPP must describe or reference the specific procedures and equations to be used to calculate the statistics for precision, accuracy, and completeness, i.e., percent completeness, relative percent difference, percent recovery, relative standard deviation, and detection limits.

7 Page 7, Table 1, Confirmation Sample Criteria: The facility must verify the accuracy of the concentration criteria provided in this table.

8 Page 8, Section 1.6, Special Training Requirements/Certification: The QAPP must address the personnel training requirements specified in EPA QA/R-5, Element A8: Special Training/Certification. Specifically, the QAPP must:

8.1 Identify and describe any special training or certifications needed by personnel and support organizations (e.g., laboratory, sampling contractor, and data validation contractor).

8.2 Discuss how such training will be provided and how the necessary skills will be assured and documented.

9 Page 9, Section 1.7, Documentation and Records: The QAPP must address the document control requirements specified in EPA QA/R-5, Element A9: Documents and Records. Specifically, the QAPP must:

9.1 Describe the process and responsibilities for ensuring that project personnel (including support contractors) have the most current approved version of the QAPP and accompanying FSP, including version control, updates, distribution, and disposition.

9.2 Itemize the information and records that must be included in the data report package and specify the reporting format for hard copy and any electronic forms.

9.3 Identify any other records and documents that will be produced.

9.4 Specify or reference all applicable requirements for the final disposition of records and documents.

10 Page 9, Section 2.2, Sample Handling and Custody Requirements: While field sample handling and custody procedures are included in the FSP, the QAPP must describe the requirements for sample handling and custody during transport, analysis, and storage.

11 Page 9, Section 2.3, Analytical Methods Requirements:

11.1 The QAPP must specify roles and responsibilities relative to the review and approval of the laboratory's "established QA/QC plan."

11.2 The QAPP states that "analyses will be performed in accordance with standard operating procedures consistent with the QA/QC plan." The QAPP must specify and include these standard operating procedures.

11.3 The QAPP must describe how system failures are to be addressed, specify responsibilities for corrective action, and address how the effectiveness of corrective actions will be determined and documented.

11.4 The QAPP must include or reference the specific procedures that will be used to determine MDLs.

12 Page 12, Section 2.4, Quality Control Requirements: The QAPP must require that sample containers be selected, prepared, cleaned, and controlled per EPA Directive #9240.0-05A Specifications and Guidance for Contaminant-Free Sample Containers (EPA 540/R-93/051,

December 1992).

13 Pages 12-13, Section 2.4.1, Duplicates: The QAPP must include protocols for the collection and submittal of split samples to EPA, on an as requested basis.

14 Page 13, Section 2.4.2, Laboratory QA/QC Samples:

14.1 The QAPP must specify the required type and frequency of laboratory QA/QC samples. It must list the associated method or procedure and corrective action in the event of failure to meet established acceptance criteria. Laboratory QC samples include, but are not limited to, method and reagent blanks, duplicates, matrix spikes, and independent calibration verification standards. The QAPP must specify or reference the procedures to be used to calculate applicable statistics (e.g., precision, accuracy, and completeness).

14.2 Laboratory QA/QC samples are not collected by the sampling team, rather they are prepared in the laboratory by the laboratory personnel. Field personnel can be requested to collect sufficient volume of a pre-defined field sample and submit it to the laboratory so that the laboratory can prepare matrix spikes (organics and inorganics) and matrix spike duplicates (organics). The QAPP must be revised and corrected accordingly.

14.3 The QAPP states that "These samples must be used to prepare and analyze matrix spike sample as described in the laboratory QAPP." The Astaris QAPP must address the facility's protocols for review and approval of these requirements. Also, the laboratory's QAPP must be provided to EPA for review.

15 Page 13, Section 2.5, Instrument/Equipment Testing, Inspection, and Maintenance Requirements: The QAPP must address the requirements specified in EPA QA/R-5, Element B6: Instrument/Equipment Testing, Inspection, and Maintenance. Specifically, the QAPP must:

15.1 Describe how inspections and acceptance testing of instruments, equipment, and their components affecting quality will be performed and documented to assure their intended use as specified in the QAPP/FSP.

15.2 Identify and discuss the procedure by which final acceptance will be performed by independent personnel (i.e., personnel other than those performing the work).

15.3 Describe how deficiencies are to be resolved, when re-inspection will be performed, and how the effectiveness of the corrective action will be determined and documented.

15.4 Describe or reference how periodic preventive and corrective maintenance of measurement or test equipment affecting quality will be performed to ensure availability and satisfactory performance.

15.5 Identify all equipment requiring periodic maintenance, including major laboratory equipment.

16 Page 13, Section 2.6, Instrument Calibration and Frequency: The QAPP must address the requirements specified in EPA QA/R-5, Element B7: Instrument/Equipment Calibration and Frequency. Specifically, the QAPP must:

16.1 Identify all equipment requiring calibration, including major field and laboratory equipment.

16.2 Describe or reference how calibration will be conducted and identify the certified equipment and/or standards used for calibration.

16.3 Indicate how records of calibration will be maintained and be traceable to the instrument.

17 Page 13, Section 2.7, Inspection/Acceptance Requirements for Supplies and Consumables: The QAPP must describe how and by whom supplies and consumables will be inspected and accepted for use. It must state the acceptance criteria for such supplies and consumables.

18 Page 15, Section 2.9, Data Management: The QAPP must address the requirements specified in EPA QA/R-5, Element B10: Data Management. Specifically, the QAPP must:

18.1 Describe the procedures for compiling and manipulating project data or reference the applicable document control system. This includes a system for tracking field notebooks, field forms, and laboratory data packages.

18.2 Discuss the control mechanism for detecting and correcting errors and for preventing loss of data during data reduction, data reporting, and data entry to forms, reports, and databases.

18.3 The QAPP should invoke the use of ASTM E178-94, Standard Practice for dealing with Outlying Observations. The QAPP must further state that all project data will be reported, including outliers, and that data reports will identify the rationale for declaring data points as outliers.

19 Pages 16-17, Section 3, Assessment/Oversight:

19.1 The QAPP must provide or reference the specific procedures for performing and

documenting assessment and response activities.

19.2 The QAPP must clarify who will conduct the laboratory audits.

19.3 The QAPP must specify who prepares field surveillance and laboratory audit reports. It must also specify the contents of these reports.

19.4 The QAPP must define the scope of authority of the assessors, including stop work orders, and when assessors are authorized to act.

20 Page 17, Section 3.2, Reports to Management: The QAPP must identify the distribution of listed reports.

21 Page 18, Section 4, Data Validation and Usability:

21.1 The QAPP must state the criteria used to review and validate data in an objective and consistent manner.

21.2 The QAPP must specify who (and on what basis) will select the 10 percent of the data to be validated.

21.3 The QAPP must describe or reference the specific procedures for verifying and validating project data. It must discuss how issues will be resolved and the authorities for resolving such issues.

21.4 The QAPP must identify who is responsible for data reconciliation.

21.5 The QAPP must describe how data reconciliation will be documented, issues will be resolved, and how limitations on data use will be reported.

22 Page 18, Section 5, References: The QAPP must update the reference for EPA QA/R-5 and the National Functional Guidelines for Inorganic Data Review.

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Field Sampling Plan

GENERAL COMMENTS

23 The FSP must reference and invoke the associated QAPP. It must include a statement to ensure that field personnel are aware of the fact that they need both documents in the field.

24 The FSP must reference and invoke all associated standard operating procedures, e.g., those of the sampling contractor.

25. Appendix D, Field Sampling Plan
The plan which will be followed in the event contamination is found under the liners must be included.

SPECIFIC COMMENTS

26. Page 3, Section 3.2, Duplicate Samples: The FSP must include protocols for the collection and submittal of split samples to EPA, on an as requested basis.

27. Page 3, Section 3.3, Laboratory Quality Control Samples: Laboratory QC samples are not collected by the sampling team, rather they are prepared in the laboratory by the laboratory personnel. Field personnel can be requested to collect sufficient volume of a pre-defined field sample and submit it to the laboratory so that the laboratory can prepare matrix spikes (organics and inorganics) and matrix spike duplicates (organics). The FSP must be revised and corrected accordingly.

28. Page 3, Section 4, Sample Designation: The FSP must outline the sample numbering system that will be implemented for project samples.

29. Page 5, Section 5, Sampling Equipment and Procedures:

The FSP must list and describe all field equipment to be used in the sampling event, including sampling and measurement and test equipment. The FSP must specify which equipment will be disposable and which will require decontamination.

The FSP must define requirements related to quality control of reagents used in the field, e.g., sample preservation acid solutions and calibration standards.

The FSP must require the use of and specify the information that will be documented on chain-of-custody forms.

30. Page 5, Section 5.1: Field Logbooks:

The FSP must require the use of rain-resistant field notebooks and waterproof ink.

The FSP must require the following: The person recording the notes will sign and date the bottom of every page in the field notebook. Changes will be crossed out with a single line so that the original text remains legible; the change will be initialed and dated. Unused portions of logbook pages will be crossed out, signed, and dated by the assigned individual at the end of each

workday.

The FSP must require the sampling team to include the following information in the field notebook at the time of sample collection: weather conditions, numerical value and units of each measurement, and conditions that might affect the representativeness of the samples.

31. Pages 7, Section 5.1.2, Sample Coding on Sample Containers: The FSP must clarify the protocols the sample team leader will use to "create a unique number for each sample container." Also, EPA procedures related to field notebook records and custody forms have been established to provide redundancy of sampling information. Under the proposed system, the information in the field notebooks is not duplicated elsewhere. The FSP must provide for a backup system for reconciling these numbers with the "true sample codes" in the event that the field notebook is lost or damaged.

32. Page 7, Section 5.3, Duplicate Sample Collection: The FSP must provide specific procedures for collecting duplicate samples.

33. Page 8, Section 5.4, Laboratory QA/QC Sample Collection: The FSP must clarify what is meant by "For soil/sediment samples, no additional sample material is required, confirmation sample is designated as a laboratory QA/QC sample."

34. Pages 8, Section 5.6, Equipment Decontamination Procedure: The FSP offers choices as to how the same piece of equipment will be decontaminated. The FSP must either designate specific decontamination procedures or provide decision criteria and protocols for selecting decontamination procedures.

35. Page 8, Section 6.1, Sample Handling:

The FSP must specify the procedures in place to ensure the continued integrity of the samples by guarding against cross contamination or degradation.

The FSP must specify the procedures in place to ensure a continuous chain of custody from sample collection to sample receipt by the laboratory.

Pre-cleaned and certified sample containers should not be rinsed prior to use. The FSP must be corrected regarding this matter.

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CONCURRENCES:

INITIALS					POLICY 445		RIS INFO SUBMITTED	
NAME	Meyer	Boyd			YES	NO	YES	NO X
DATE					IF YES, BCC ATTACHED			

PEER REVIEW:

INITIALS			CF			
NAME	Palumbo		Fisher	Brown	Orlean	Hedeen
DATE	11/6		11/6/01			

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NAME	Meyer	Boyd			YES	NO	YES	NO X
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PEER REVIEW:

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NAME	Palumbo		Fisher	Brown	Orlean	Hedeen
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bcc: Andy Boyd
Sylvia Burges
Gil Haselberger